Title (en)

BLADED DISC FOR A ROTATING MACHINE, GAS TURBINE ENGINE AND METHOD OF REDUCING THE LOW-CYCLE FATIGUE OF A BLADE WITHIN A BLADED GAS TURBINE ENGINE

Title (de)

BESCHAUFELTE SCHEIBE FÜR EINE DREHENDE MASCHINE, GASTURBINENTRIEBWERK UND VERFAHREN ZUR REDUZIERUNG DER NIEDERZYKLISCHEN ERMÜDUNG EINER SCHAUFEL INNERHALB EINES BESCHAUFELTEN GASTURBINENTRIEBWERKS

Title (fr)

POUR UNE MOTEUR ROTATIF, MOTEUR &#192

Publication

EP 4202187 A1 20230628 (EN)

Application

EP 22209247 A 20221124

Priority

GB 202118890 A 20211223

Abstract (en)

A bladed disc for a rotating machine comprises a central disc (802) that rotates about a central axis (9). The central disc has a series of blades (401; 801) arranged around its periphery. The blades (401; 801) have dovetail roots (402) which engage with slots on the central disc (802). The bladed disc is configured so that there is a pre-loading force between the blades (401; 801) and the central disc (802) such that each blade (401; 801) is forced away from the central axis (9) of the bladed disc. The pre-loading force is equal or greater than 40% of the maximum centrifugal force applied to the blade (401; 801) during a flight cycle.A gas turbine engine comprises such a bladed disc.A method of reducing the low cycle fatigue of a blade (401; 801) within a bladed gas turbine engine comprises: inserting a shaped blade (401; 801) into a corresponding slot on a disc (802) of a gas turbine engine, and inserting a shim between the shaped blade (401; 801) and the disc (802), so as to force the blade (401; 801) away from the centre of the disc (802) of the gas turbine engine. The shim is inserted so that it produces a force between 40% and 100% of the maximum centrifugal force applied to the blade (401; 801) during a flight cycle.

IPC 8 full level

F01D 5/30 (2006.01)

CPC (source: EP US)

F01D 5/02 (2013.01 - US); **F01D 5/3007** (2013.01 - EP US); **F02C 7/36** (2013.01 - US); **F03G 7/0614** (2021.08 - US); F01D 5/3015 (2013.01 - EP); F01D 5/323 (2013.01 - EP); F05D 2220/36 (2013.01 - EP); F05D 2260/37 (2013.01 - EP); F05D 2300/501 (2013.01 - EP); F05D 2300/505 (2013.01 - EP); F05D 2300/509 (2013.01 - EP); Y02T 50/60 (2013.01 - EP)

Citation (search report)

- [XI] US 5123813 A 19920623 - PRZYTULSKI JAMES C [US], et al
- [XI] US 2016186581 A1 20160630 - DIERKSMEIER DOUGLAS D [US], et al
- [XI] US 2019120069 A1 20190425 - BURDGICK STEVEN SEBASTIAN [US], et al
- [XI] US 2009060745 A1 20090305 - DOUGUET CHARLES JEAN-PIERRE [FR], et al
- [XI] EP 2395200 A2 20111214 - UNITED TECHNOLOGIES CORP [US]
- [XI] EP 2977547 A1 20160127 - UNITED TECHNOLOGIES CORP [US]
- [XI] EP 2372095 A1 20111005 - SIEMENS AG [DE]
- [XI] DE 3236021 A1 19830519 - BBC BROWN BOVERI & CIE [CH]
- [XI] US 2014161617 A1 20140612 - CHATENET LUC HENRI [FR], et al
- [XI] JP S61129405 A 19860617 - HITACHI LTD
- [XI] RU 185519 U1 20181207
- [XI] US 2014178202 A1 20140626 - CHATENET LUC HENRI [FR], et al
- [XI] JP H01237304 A 19890921 - TOSHIBA CORP

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA

Designated validation state (EPC)

KH MA MD TN

DOCDB simple family (publication)

EP 4202187 A1 20230628; GB 202118890 D0 20220209; US 2023203956 A1 20230629

DOCDB simple family (application)

EP 22209247 A 20221124; GB 202118890 A 20211223; US 202218062734 A 20221207